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ABSTRACT

This packet contains four papers from a symposium on evaluation in human resource development (HRD). The first paper, "Context and Causation in the Evaluation of Training: Relating Economic and Learning Transfer Theory" (Kevin Hannigan, Paul Donovan, Elwood F. Holton III, Reid A. Bates, Sharon S. Naquin), links the following three disparate literatures addressing the effectiveness of HRD: economics, evaluation, and learning transfer. The second paper, "Does HRD Effectiveness Vary for Organization and HRD Related Factors?" (A. A. M. [Ida] Wognum), examines whether certain contextual conditions influence the effectiveness of HRD programs and activities. No differences in perceived effectiveness were observed for the factors such as size and structure of company, economic sector, structure of the HRD function, and transfer conditions. Significant differences were found for company HRD climate, position of the HRD department and form of the HRD program. The third paper, "Profile of Management Training Evaluation Studies with Control Group: 1983-1997" (Jiping Zhang, Martin Burlingame) reports on a study that quantitatively reviewed major program and design characteristics of 29 empirical management training evaluation studies. The results showed that progress has been made by training researchers in evaluating training outcomes of trainees' job performance and organization results and in conducting rigorous cause-effect research in the work setting. The final paper, "An Evaluation of a Competency Based Training Program" (Dale E. Thompson), evaluates the Performance Based Teacher Education (PBTE) program in Arkansas. The competency categories ranked highest by the instructors were the following: serving learners with special needs, instructional planning, instructional evaluation, and teaching adults. The papers contain reference sections. (KC)

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Context and Causation in the Evaluation of Training: Relating Economic and Learning Transfer Theory

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This paper links three disparate literatures addressing the effectiveness of HRD: economics, evaluation, and learning transfer. Economic models are shown to be inadequate in assessing HRD effectiveness because they ignore the individual firm context. HRD evaluation models, which focus on the individual program level, are also limited. The influences approach represented by the learning transfer literature show promise for linking economic and HRD theory because they incorporate firm context when determining effectiveness.

Keywords: economics, learning transfer

The pre-eminence of knowledge and skills as the sources of wealth creation and economic growth is, along with globalisation, one of the major issues in business at the end of the 20th century. This topic has been covered widely to the extent that the most productive areas of recent management thinking have been focused almost exclusively on the means through which this new paradigm can be exploited. As a result, HRD has been propelled into a central role in management thinking. However, this has not been always reflected in practice since many of the methodologies for monitoring and assessment continue to reflect the previous importance of fixed capital and the quantity of labour employed.

The central importance of HRD in the modern economy is expressed by Eliasson (1994) who states that:
Human competence dominates economic performance at all levels. Its hallmark is heterogeneity to the extent that in each agent certain dimensions of it are unique and not (directly) imitable or communicable. (p.177)

This short passage comes close to capturing the essence of the central problem discussed in this paper. When dealing with the development of human competence, the context is of the utmost importance. When evaluating training, it is important to remember that not only do the individuals being trained differ in their learning abilities and requirements, but there are differences arising from the trainer and the environments in which the training is given and the learning put to use. This complexity means that aggregate evaluation may miss important aspects and that an individualised approach is required.

This paper reviews some approaches to the evaluation of training from the literature. The next section describes the approach adopted in the economics literature and identifies some inherent weaknesses. These arise from the insufficiency of the model of the firm that dominates mainstream economics. Subsequent sections assess models derived from the HRD literature and identify the strengths of a complex model that has emerged in recent years. The final sections discuss the means through which this model may be operationalized and suggest some possible extensions.

The conclusion of the paper is guided by two propositions. First, the most useful results when assessing HRD interventions will be derived where the analysis takes place at the level of the individual, with a possibility for aggregation to the level of the firm. Second, as a result of the range of factors that can influence uptake and performance, the model applied must recognise that no simple relationship exists between training interventions and changes in output. This means that the approach adopted must be able to identify not only what training is required, but also why instances of training have particular impacts. As a further development, it is suggested that an ability to determine these factors in advance of the expenditure of resources would increase greatly the added value of efforts to monitor the returns to training.

Assessing the Benefits of Training: Probing in the Dark?

The argument for training is generally put in terms of its importance for competitiveness. However, while admitting that there is a paucity of information on the precise level of expenditure on training, and the benefits derived, studies often conclude that past levels of investment in HRD are inadequate for economic growth. There is usually an argument for a role for state or collective intervention in overcoming this deficiency. Clearly, there is an acceptance of a market failure. Underlying this is the influential work of Becker (1964) who emphasised the need to distinguish between general and specific skill development and identified the problems that arise from the portability of many skills. One effect of this analysis has been that economic research has tended to concentrate on the aggregate

evaluation of publicly funded programmes or policy interventions. However, this is insufficient to conclude that a particular programme of training represents a worthwhile investment at the level of a particular firm.

The issue of the optimum level of HRD has been widely discussed in Ireland and similar tensions appear. The case in favour of the importance of training was made forcibly by the Culliton Report (Government Publications, 1992, p.11) which went as far as to contend that the Irish education system required review as it was overly academic and under-emphasised the need for vocational education or training. This view has been reflected in changes in the education system in recent years. NESC (1993), in a comparative study of Irish firms, also found that

...competitive performance is adversely affected by poor quality human capital... there is a skills gap between Ireland and best practice firms in competitor countries. (p.206)

This finding was confirmed by O'Connell and Lyons (1995) who concluded that:

There is evidence of a skills gap at operative, supervisory and management levels, particularly in smaller indigenous firms, which adversely affects productivity, competitiveness and growth prospects. (p.65)

These ideas provided the context for the White Paper on HRD (Government Publications, 1997). It asserts that the development of Ireland's human resources is 'crucial' to economic performance. It also reflects the data and informational deficiencies that may explain why investment in HRD has been insufficient, concluding that 'information on human resource development practice in Ireland is quite inadequate. (p.48). However, the White Paper goes on to agree that:

The general conclusion to be derived from this review of findings relating to training endeavour is that the incidence of training activity in Ireland falls short of best international practice. (p.51)

This begs the question: if HRD is beneficial at the level of the individual, the firm and the whole economy, why is existing investment inadequate? The portability of skills may be part of the answer, but it is not a full explanation. Many skills are firm and industry specific. In addition, if the individual is a beneficiary, then why should individuals be so reticent to accept some of the costs? It should be remembered that, even if there is good reason for collective action, the crucial decisions will still remain at the level of the firm.

The role played by uncertainty concerning the benefits derived from training is a major part of the explanation for this deficient level of investment. This uncertainty arises from difficulties in implementing an efficient methodology for the evaluation of training. This problem must be overcome to remove uncertainty surrounding the investment decision. However, moving directly to evaluation of outcomes risks making unjustified assumptions regarding the linkages between the various stages of the training process. It also fails to determine why outcomes may vary.

Evaluation in Economic Models of Training

While the approach adopted by economists to evaluating the impact of training on performance is generally theoretically consistent, underlying assumptions have led to problems and less than satisfying results. As argued below, these problems arise due to the adherence to a restrictive interpretation of the nature of firms, what they do and how they operate. The theoretical foundations of most approaches lie not with economic theories of the firm, but with economic growth models. The most widely applied theory of economic growth proposes that the rate of growth is related to changes in the quantities of capital and labour available in an economy, and a poorly specified productivity, or human capital, variable. The problem has always been that empirical estimations suggest over 50% of observed growth is accounted for by this productivity variable. It is also likely that this proportion may be rising.

Research shows that inclusion of a variable to account for education is useful, but insufficient, to explain the differences in growth rates internationally. Research into the impact of training on productivity - distinguished from education by being delivered to those in employment - began by looking at data on individual workers. The results were not particularly encouraging, partly due to difficulties in specifying the effects over time. Bartel (1994) marks a shift away from this through the development of an empirical model that relates expenditure on training within firms to lagged changes in productivity. The results showed a positive relationship, but could be criticised due to a lack of control variables. For example, it may be the case that firms engaged in high investment in training are of a particularly progressive outlook or are undergoing other improvements. However, this approach has been influential in the framework adopted in subsequent research. In general, economics has tended to completely ignore intermediate steps and attempt to find relationships between training as an input and output measures such as changes in productivity. While the effect on output may be the ultimate objective of training, the linkages have not been explored in economic research, or even recognised as intermediate steps in many cases.

The findings of two further pieces of research are worth noting. Black and Lynch (1996) undertook an elaborate econometric analysis of the relationship between training and company performance. The data they used identified different types of training and also used variables to allow for differences in the characteristics of the person obtaining the training. They find that the impact of training on productivity is related to the time between the training and the measurement of its impact.

... current training lowers productivity, while past training raises current productivity. This is very similar to what we see happening with the age of the capital stock in manufacturing. (1996, p. 265)

Their finding is very illuminating since it points clearly to the importance of firm context and organisational characteristics to the results obtained from training. The firm and its managers need time to integrate newly acquired skills into existing processes and organisational structures. However, it is not possible to pursue this idea within this approach. Black and Lynch, as is the case with many other economic researchers, can only point to problems regarding who should pay for training and the importance of the difference between job specific and general training. The influence of Becker (1964) is clear.

Barrett and OConnell (1998) use a model similar to Bartel's to estimate the returns to in-company training using Irish data. They differentiate between general and specific training on the basis that employees who receive general training are more likely to quit, thus removing or reducing the impact on company performance. A 3-year time-lag was allowed for the effect of the training. The unexpected finding was that general training increased productivity, but specific training had no such effect. Being concerned that there may be a problem with matching new skills to old processes, and aware of the Black and Lynch conclusion, they included variables to allow for management and process innovation in firms in the sample. This is a rare attempt in economics to model management decisions and organisational characteristics as explanatory variables, rather than relying on an assumption of strong rationality and changes in inputs to explain changes in output. However, the results were disappointing: the variable for specific training remained statistically insignificant while none of the variables for innovations were significant either.

These results are certainly not what HR managers would hope for and are in keeping with the conclusions of the survey by Walsh (1998):

There is a consensus among economists that human capital formation is at least as important as physical capital formation among the determinants of a country's long-run growth record. ... [However,] the return to investment in formal academic education seems to be higher than that to investment in vocational training, especially when the latter is not on-the-job. (p.13)

In other words, once a basic education is provided, such that people are taught how to learn and obtain basic skills, the best returns will be obtained from allowing them to learn from experience. While it is accepted that Walsh was more interested in assessing the role and impact of formal education as distinct from training, the research in the returns to training literature suggest his conclusion holds.

The Nature of the Firm in Economic Research

The results from economic models often suggest that company investments in the formation of skills are unlikely to lead to an acceptable level of return. However, before conclusions should be drawn from this, it is necessary to reconsider the nature of the firm as an entity in economic research. Although there have been considerable improvements in the understanding of the productive process and the role of information in recent years, mainstream economics continues to view the firm as a black box within which rational decisions are made given a set of input prices and market conditions. One result is that growth is analysed in terms of identifying a direct relationship

between changes in inputs and changes in output. However, this approach makes it impossible for mainstream economics to answer three questions:

- Does training increase the resources available to the firm?
- Does this result in an increase in the inputs used by the firm?
- Are there counteracting factors brought into play when training is undertaken - diseconomies of scale, restructuring costs or output price changes?

A different approach such as the framework developed by Penrose (1980) offers a way, as yet poorly developed, for economics to get around these problems. At its centre is the need to distinguish between the resources available to a firm and the inputs actually used by the firm. Penrose argues that inputs, as normally identified, are not the actual resources used by firms. Instead, firms use the services that such inputs can provide. The competency of the management is assessed by its ability to derive services from a given level of inputs. However, for ease of measurement, generic measurement standards tend to be applied directly to inputs. As a result of this clarification, there is no reason why there should be a simple relationship between changes in the quantity or value of inputs and changes in output. Furthermore, it is possible to derive an argument for the rational presence of unused inputs in a firm. These insights mean that it is now straightforward to use changes in learning and capabilities to explain changes in productivity.

The possibilities of using services change with changes in knowledge. More services become available, previously unused services become employed and employed services become unused as knowledge increases about the physical characteristics of resources, about ways of using them, or about products it would be profitable to use them for. Consequently, there is a close connection between the type of knowledge possessed by the personnel of the firm and the services obtainable from its material resources. (Penrose, p.76)

When used in conjunction with the premise that the demand faced by a firm is not absolute, but is a function of the firm's management's ability to conceive of products and ways of selling products, it is clear that competencies determine the firm's ability to grow. However, a balance must be struck between the human resources available and the ability of the firm, encapsulated in the competency of the management to design structures and processes to derive services from these resources. Thus, there is no simple relationship between the human resources available, irrespective of the efforts or resources employed in developing them, and the output, growth or productivity of the firm.

While this insight would appear to comply with the real-world existence of firms, economics has been very slow to adopt or develop this approach. For a start, it leads to the proposition that the ability of a firm to expand is constrained only by the competency of its managers. This is in direct contrast to the notion of optimum size that determines the conclusions of most economic models of the firm. In fact, as pointed out by Best and Garnsey (1999), this argument, along with much of the framework developed by Penrose, does not fit easily with the mainstream of economic theory. Mainstream theory has continued to develop models aimed at explaining the size and the implications of the size of firms rather than the determinants of firm growth. However, this type of approach is increasingly utilised by new research in areas such as evolutionary economics that concentrate on production rather than exchange.

The focus in economics remains on prices: the prices of inputs determine production technology decisions in firms; the size of firms - relative to market size - determines output quantities and the factors that influence market prices. It is assumed that the firm is operating at the most efficient size and with the most efficient technology. That is, it is using all its resources in the proportions that result in the greatest output. At the same time, the range of factors that determine the nature of activity and decisions within the firm are largely ignored. The possibility of deriving a useful methodology to identify training needs, the optimal organisation and integration of new skills and to isolate the impact of resources applied to training is limited within this framework.

The Human Resource Development Approach

The human resource development field has taken the opposite approach of economics researchers. One group of HRD researchers interested in the economic benefits of training are evaluation researchers. Contrary to economics, they view human resources as inputs whose economic value to the firm can be enhanced through properly designed and implemented training programs. In that sense they are working inside the "black box" of the firm. Although they make no direct connection to Penrose (1980), their approach is entirely consistent with his perspective that it is the services the human resource inputs provide that enhance productivity, not the inputs themselves. In HRD language, by increasing the competence and capabilities of employees, returns to the firm can be increased.

Furthermore, the HRD perspective would regard aggregate training expenditures as an inadequate measure of the potential for productivity enhancement. To the contrary much of the HRD literature points to the poor return from much of the money spent on training (Baldwin & Ford, 1988). From this perspective, the poor returns found in the economic research are easily explained by inadequate training practice, not by inadequate potential for productivity enhancement. As demonstrated by Swanson (1988), these returns can be greatly enhanced through effective HRD practices, but such practices are not widespread.

The human resource approach regards investments in human resources within the firm as a key source of competitive advantage by increasing the efficiency or contribution of the firm's human capital (Becker & Gerhart, 1996). Furthermore, the contingency view of human resources, which holds that human resource practices must be matched to the strategy of the firm, has gained increasing attention instead of the universal view which maintains that there is a set of 'best practices' to which all firms should adhere. Thus, from this perspective the HRD practices which occur inside the 'black box' of the firm is of paramount importance in determining returns from HRD investments. The only way to accurately evaluate the effectiveness of HRD interventions then is to also capture the interaction with key components of the organizational system.

Weaknesses in the HRD Evaluation Approach

Part of the reason for the disconnect between economic research and HRD evaluation practice may be attributed to the relatively simplistic approaches employed until recently. The most popular framework for evaluation has been that presented by Kirkpatrick in a series of four articles for the American Society of Training & Development Journal in 1959 and 1960. In these articles he outlined his 4 levels model of *reaction, learning, behaviour and results*. Perhaps because of its simplicity and ease of understanding it has become the most widely known and accepted (by trainers) approach to the subject. Such has been the influence of this model that, 35 years later, Kirkpatrick (1994) could claim, with considerable justification, that very little had changed, in terms of content, since 1959. In fact, the later book can be seen as basically a repetition of the earlier articles.

This approach might be labelled the *outcomes* approach because the emphasis is on demonstrating that appropriate outcomes occur. A variety of HRD researchers have offered elaborations, updates and variations in an attempt to improve the taxonomy. Suggestions for modifications have included adding a fifth level to accommodate training's ultimate value in terms of organisation success criteria (Hamblin, 1974). Phillips (1997a, 1997b) has stressed the addition of return on investment to the analysis. Kaufman & Keller (1994) have proposed the addition of societal impact as a fifth level. Lewis (1996) offers an expanded model that captures context, process and outcome factors. Brinkerhoff (1987) offered a six-level system to blend formative and summative evaluation. Swanson and Holton (1999) created the Results Assessment System in an effort to provide practitioners a systematic and theoretically sound process for assessing learning, performance and perceptions.

Others have observed that some organizations are suggesting completely new approaches are needed (Abernathy, 1999). Several phenomenological approaches have emerged as alternatives. Preskill and Torres (1999) offer evaluative inquiry as a different approach that emphasizes evaluation as a learning process. The London Business School Approach (Michelli & Haskins, 1997) takes a similar approach by advocating that evaluation be integrated with the learning process. Thus, for most management development programmes, the evaluation process should be open and flexible reflecting the 'experimentation and concrete experience' (Michelli and Haskins 1997) approach of the programme itself.

Although many contributions have been made to the literature since the 1950s, even Kirkpatrick (1996 p.54) stated that 'the content has remained basically the same'. However, there has been sharp criticism of this approach. It has been argued that the 4 levels approach is flawed as an evaluation model as it is no more than a taxonomy of outcomes (Holton 1996). Comprehensive studies on the 4 level model (Alliger & Janak, 1989; Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997) showed that the implied causal linkages between each level of the taxonomy had not been demonstrated by research. Research further suggests that reactions have little correlation with learning or performance (Alliger & Janak, 1989; Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997; Dixon, 1990; Warr & Bunce, 1995). It has also been argued that reactions should not be regarded as a primary outcome but, rather, as a moderator of the relationship between training motivation and learning (Mathieu et. al. 1992). This is in direct opposition to the four-level model where trainee reactions, defined as happiness, are a primary outcome of training (Kirkpatrick 1994).

The case against the four level model is further reinforced when examining use of the four levels in practice. Surveys of evaluation practices based on the four level model have consistently shown that most organisations conduct some evaluations at levels one and two but many fewer evaluate at levels three and four.

Only a relatively small number evaluate at level four. In a recent study and review of evaluation practice studies in the U.S. Twitchel, Holton & Trott (in press) noted that despite mounting evidence of the payoff from investing in human resource practices and improved methods of evaluation, evaluation practices have changed very little in the last thirty years for which data is available. They conclude that:

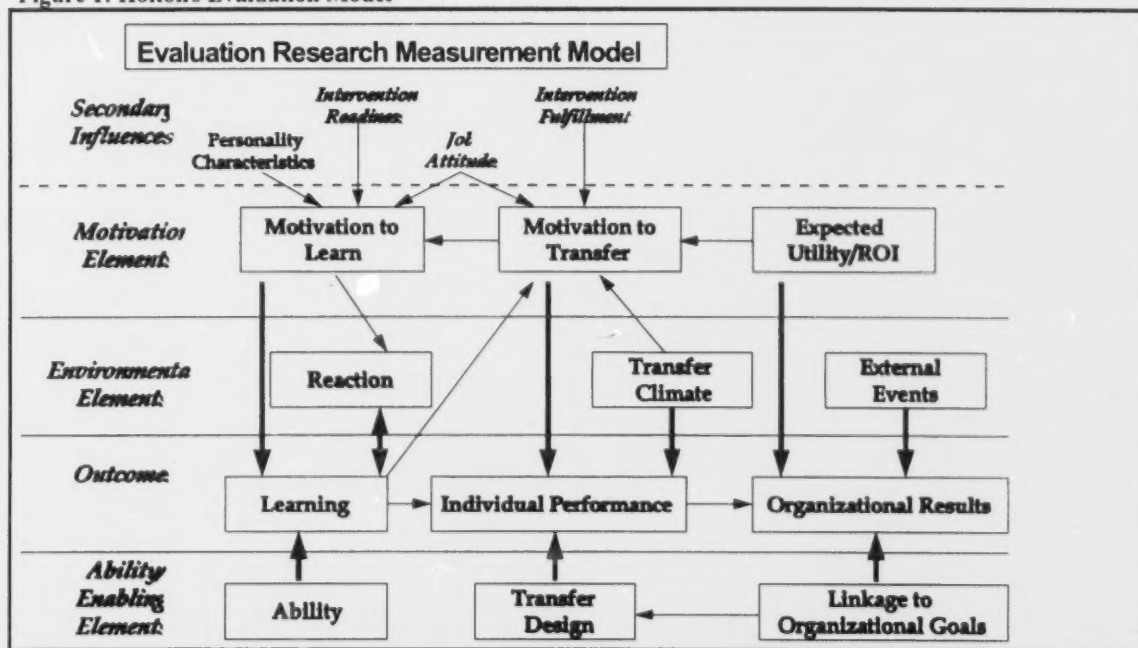
It would seem pointless to simply spend another 10-20 years pushing practitioners to use a taxonomy and methods that they continue to resist after nearly 40 years of effort. New research is needed that takes a more exploratory look at the decision and influence processes that managers use to make decisions about training.

The Learning Transfer Systems Approach

There are also serious questions to be answered about the absence of essential elements from the model. The major intervening variables that affect learning such as trainee readiness, motivation, training design and reinforcement of training on the job are not specified in the four-level model. In addition, individual differences may also affect outcomes and these are not specified in the model. This has the potential to lead to faulty decisions about HRD intervention effectiveness (Holton, 1996; Swanson & Holton, 1999). In one sense, the pure outcomes evaluation approaches are quite similar to the basic economic models in simply measuring inputs and outputs, though at the program instead of the firm level.

Holton (1996) proposed an alternative, more comprehensive model which might be labelled the "influences" approach. The model was based on a weaving together of existing work in the area

Figure 1: Holton's Evaluation Model



of the transfer of learning. This model, although complex, suggested that alternative strategies might be possible to enable the development of practical evaluation tools that were grounded in theory.

The strengths of this model include the fact that it removes reactions as a primary outcome of training. The model is also holistic in its approach and moves the debate away from a concentration on outcomes to a discussion about how training works and how the factors that make it work can be enhanced in the organisation. By doing so it avoids the weaknesses that were identified in the case of outcomes-based models that assumed simple relationships and causal linkages were in place.

The reintroduction of context by several authors in search of approaches to supersede the 4 levels one is an interesting departure. Much work has been done on the transfer of learning into the workplace from the training intervention. Several influences on the motivation to transfer have been identified including intervention fulfilment, learning outcomes, job attitudes, and expected utility of results, (Broad & Newstrom, 1992; Baldwin and Ford, 1998). Holton and Bates (Holton, Bates & Ruona, 1999) encapsulate these approaches most successfully in their conceptual model of learning transfer systems.

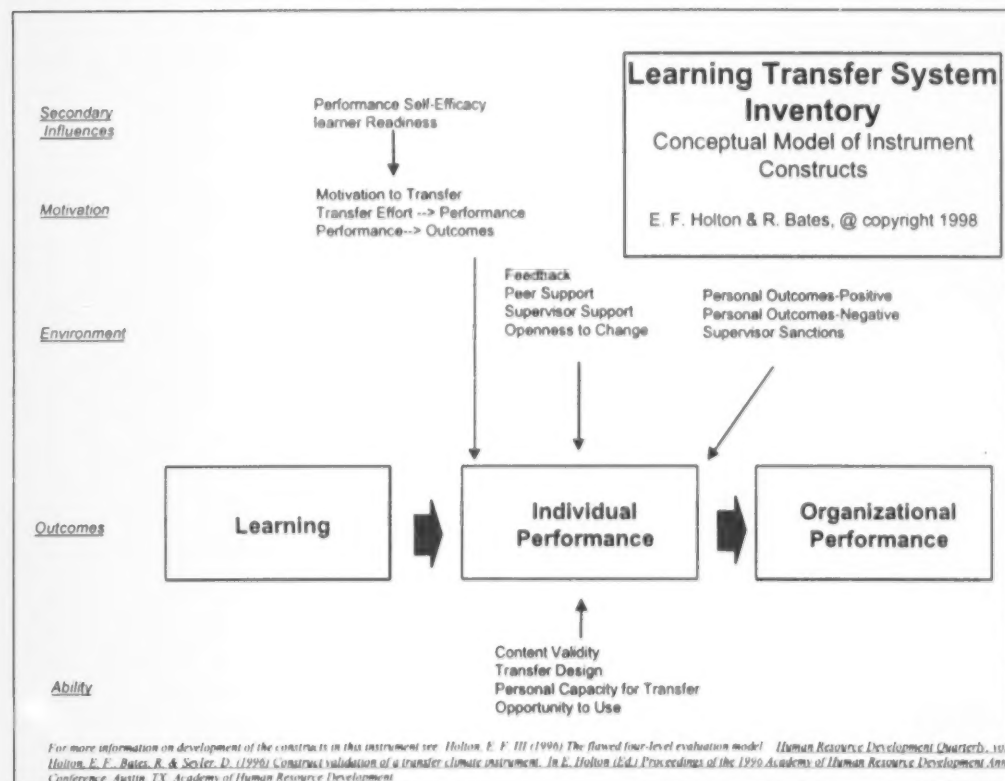
Learning transfer systems have the potential to help close the gap between economic theory and program-level HRD evaluation. As discussed, economists have no means to model what occurs inside the 'black-box' of the firm. Thus, their assessments are at the firm level or higher. HRD evaluation has traditionally been at the individual learning program/event level, aggregating upward. However, HRD evaluation has mostly ignored other influences within the firm that affect performance outcomes from learning. The influences approach, characterized here by Holton's (1996) model, links the two by describing the system variables which intervene between program outcomes, and firm level outcome.

The *learning transfer system* is described as those organisational supports and constraints that influence whether participants take what they learn in the training environment and transfer it to the work environment. It describes one critical portion of the overarching Holton (1996) model, the transfer of learning into individual performance. This system is shown in Figure 4.

Recently, Holton has incorporated this framework into a decision-making tool as part of the Results Assessment System (Swanson & Holton, 1999). The Learning Transfer System Inventory (LTSI) (Holton, Bates & Ruona, 1999) was developed to assess the sixteen factors that influence transfer. It has been used mostly as a diagnostic tool to date - participants complete it at the end of training interventions and the results are used to assess the quality of the transfer climate and to indicate where changes might need to be made.

However, the LTSI is only a general diagnostic tool. Each organization is expected to have variations in its optimal configuration for learning transfer because of cultural differences. Thus, the leverage points for

Figure 4: The Learning Transfer System Inventory



learning transfer system improvement are expected to be both a function of a) deficiencies in specific factors and b) leverage points identified as predictive of transfer in the specific organization. For example, managerial support, an element in the LTSI, will be more critical in some organisations than in others while peer support might be more critical in some instances.

The next stage in the continuing program of LTSI research is to investigate its predictive validity with organizational performance measures. The general promise of this approach is to enhance evaluation research by demonstrating that system influences add predictive power to economic models which predict the return from investments in training.

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Does HRD Effectiveness Vary for Organization and HRD Related Factors?

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This study examines whether certain contextual conditions influence the effectiveness of HRD programs and activities. Stakeholders of two types of HRD programs who were also from companies in two economic sectors were asked to complete a questionnaire. No differences in perceived effectiveness was observed for the factors size and structure of the company, economic sector, structure of the HRD function and transfer conditions. Significant differences were found for the problem that serves as starting point for HRD, company HRD climate, position of the HRD department, and the form the HRD program takes.

Keywords: HRD Effectiveness, Contextual Characteristics, Multi-level Analysis

HRD programs and other learning interventions take place within the context of the company for which they are intended. According to contingency theory it is often assumed that there is a close link between characteristics of this context and the way in which organizational processes evolve. Deviating from an appropriate model, contingency theorists maintain, creates a lower degree of organizational effectiveness (Khandwalla, 1977; Van de Ven & Drazin, 1985). Literature indicates a number of contextual characteristics influencing organizational structures and processes. If these are not aligned with their contextual characteristics, a lower degree of organizational effectiveness is expected. Roth (1992), for instance, found that organizational effectiveness increased when decision-making characteristics were aligned more adequately with the (international) strategy of a company. Based on the aforementioned, it is assumed there will be less HRD effectiveness if HRD structures and processes do not match their contextual conditions. The question is, which contextual factors are important for achieving HRD effectiveness.

Theoretical Framework

Literature and earlier research (Wognum, 1998) indicate a number of contextual characteristics influence organizational structures and processes. These are usually divided into two categories: organizational factors and company environment (Mintzberg, 1983; Tjepkema & Wognum, 1999). Considering the HRD perspective, these characteristics refer to the organization of the HRD function, which is usually in the form of an HRD department, and to the environment of the HRD function, which can be divided into two parts: the company in which the HRD function is embedded, and the company's external environment the so-called macro-environment (Figure 1).

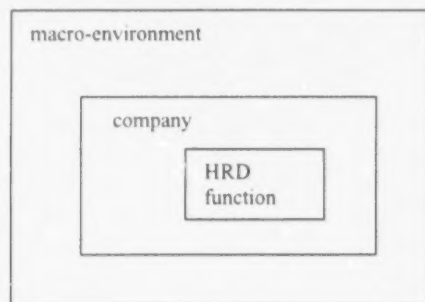


Figure 1: the context of the HRD function

Characteristic of the Macro-Environment

The macro-environment consists of all forces which affect the company, such as demographic, social, economic, ecological, technological, political and cultural. Some of these forces have a direct or indirect impact on the HRD function (American Society for training and development, 1994). The ever-increasing trend toward automation, robotics, and other advanced computer applications, for example, requires workers with sophisticated competencies. The HRD function is obliged to deliver HRD programs which provide these workers with the required skills. Technological modifications and changes in product-market relations urge companies to train and develop their employees (Pettigrew c.s. in Garavan, 1991). These examples make it clear, that the macro-environment context will be reflected in the kind of problems or developments with which the company is faced. Such problems are starting points for HRD interventions so that employees can obtain the necessary knowledge, skills, and attitudes needed. Therefore, macro-environment characteristics are not a direct object of study but act more indirectly by considering the problem that serves as a starting point for HRD interventions. This problem can be conceived as a characteristic of the company.

Characteristics of the Company

Besides the aforementioned problem characteristic, other company related factors which may have an impact on company processes and the HRD function (Mintzberg, 1983, Tjepkema & Wognum, 1999) include the economic sector of the company, its size, structure, HRD climate and the degree of company innovation.

The economic sector is a characteristic which refers to a group of organizations producing the same kind of product or delivering the same type of service, i.e. agriculture, transportation and communication, retail and wholesale trade, insurance or service providing organizations. The economic sector characterizes the kind and complexity of a company's core processes and, by that, the core competencies needed. This affects company HRD policy processes. In certain sectors (e.g. construction) companies hardly offer any HRD activities, while in other sectors companies are extremely active in this field (e.g. insurance) (Wognum, 1998).

The size of the company influences company processes. In large companies these processes are much more formalized than in smaller ones (Mintzberg, 1983). It has been shown that in companies with more than 500 employees a more explicit training policy is formulated and drawn-up than in smaller companies (Mulder, Akkerman & Bentvelsen, 1989). Also a strong coherence was found between the size of the company and the level of HRD activities: the larger the company, the more HRD interventions were found (Centraal Bureau voor de Statistiek, 1995). Large companies often need other skills and attitudes than smaller companies. For example, companies with more than 1,000 employees seem to offer significantly more programs on marketing skills than companies with less than 100 employees (Wognum, 1998).

With regard to the structure of the company, the degree of organizational (de)centralization greatly exerts influence on company processes (Koopman & Pool, 1992), and including the HRD function. For instance, it influences the choice of target groups attending HRD programs, and the choice for the content of HRD intervention. Centralized companies typically offer fewer HRD activities for top management than companies with decentralized structures (Wognum, 1998). The level of (de)centralization also affects the way in which the HRD function is organized. In decentralized companies it is common to divide HRD responsibilities over a central HRD department (located at the central staff), and among several decentralized HRD officers or trainers (Wexley and Latham, 1991).

The company's HRD climate relates to the visible characteristics of HRD corporate culture (Wexley & Latham, 1991). Bates, Holton, and Seyler (1997) demonstrated the importance of introducing the climate factor into the HRD transfer study. The attitude of managers towards training, which is an important aspect of corporate HRD climate (Ford & Noe, 1987; Wexley & Latham, 1991), may affect their involvement in HRD activities or the opportunity they create for assessing training needs at all organizational levels. Their attitudes affect the level of investment in HRD interventions (Rothwell & Kazenas, 1989; Garavan, Barnicle & Heraty, 1993), and their willingness to consult with others on HRD issues (Kessels, 1993).

The degree of innovation within the company is another important contextual factor. Hall & Goodale (1986) point to a company's stage of organizational development as an important characteristic for HRD participation. By that is also meant the emphasis is on the degree of company innovation. For instance, companies with a lot of changes in work processes invest more in the development of their employees than companies which do not change their work processes (Useem, 1993).

Characteristics of the HRD Function.

HRD related factors which are seen as important for the HRD function include structure and position of the HRD department, degree of innovation within the HRD department, and the form the HRD program takes.

Based on Mintzberg (1983), it is assumed that structure and position of the HRD department (central or decentralized, staff or line), indicate where and by whom HRD decisions are made and what possibilities a company has for delivering effective HRD interventions as well as the focus of the HRD function (London, 1989). A decentralized department often works for the unit in which it is located - in many cases the operating core. A centralized department focuses on the overall organization, with top and middle management as target groups.

Following the foregoing reasoning, the degree of innovation of the HRD department is an important characteristic which will probably have an impact on its functioning and results.

The form the HRD program takes is one of the factors one has to account for when designing an HRD intervention. It depends on the kind of organizational problems the HRD department faces whether the program is tailored or customized program for a specific company, or a standard or other 'off-the-shelf' program, suitable for every company and problem situation.

Even though the form or quality of the HRD program may be good, it does not mean participants are able to transfer acquired knowledge and skills to their working situation. In other words, arrangements - the so-called transfer conditions - have to be made in order that employees apply the learned competences to the workplace (Thijssen & Den Ouden, 1995).

Organization and HRD Related Factors and their Impact on HRD Effectiveness

The aforementioned organization and HRD related characteristics, represented in Table 1, are expected to have an impact on HRD effectiveness. This is conceived as the extent to which HRD goals and objectives are achieved. In order to define the level of effectiveness, HRD effects can be measured at learning (effect on knowledge, skills and attitudes), behavior (effect on job behavior of individual employees) and results levels (effect on the performance results of groups, departments or the company) (Kirkpatrick, 1994).

Table 1: *Organization and HRD related factors by which the impact on HRD effectiveness will be explored*

Organization related factors	HRD related factors
Problem that serves as starting point for HRD	Structure and position of the HRD department
Economic sector	Degree of innovation of the HRD department
Size and structure of the company	Form the HRD program takes
Degree of innovation of the company	Transfer conditions
Company HRD climate	

Research Question

To create effective HRD interventions it is important to investigate which contextual factors have an impact on the effectiveness of corporate HRD programs and other learning activities, and to what extent. In other words: to what extent does HRD effectiveness vary for organization and HRD related factors, as represented in Table 1?

Methods

The survey reported here was carried out as part of a larger one among Dutch companies (Wognum, 1999). These were selected from a national database from the Association of Chambers of Commerce.

Sample. Two company related factors were used as selection criteria: size of the company and its economic sector. Following this criteria, 44 companies with more than 500 employees were selected from the aforementioned database: 11 from the industrial sector and 33 from the financial and commercial services sector. A non-response analysis showed no significant differences between the non-response group and the 44 companies in the study, concerning such contextual variables as size and structure of the company and structure and position of the HRD function. In each company one HRD program was selected (from the two frequently recurring fields of automation and social skills). This resulted in 23 selecting automation and 21 social skills programs. In order to define the effectiveness of the selected HRD programs, four categories of respondents within the company were selected: the

HRD company representative, a maximum of 15 HRD participants, their supervising manager and (if present) their subordinates. All groups can be considered as having an interest in the results of the HRD programs (so-called stakeholders).

Data collection. Data were collected in the spring and summer of 1997 using a questionnaire sent to 767 representatives of the four groups of stakeholders (44 HRD company representatives, 357 HRD participants, 242 supervising managers and 124 subordinates). The questionnaire was designed to collect information on the aforementioned contextual factors and HRD effectiveness. In order to compare the effects of the 44 HRD programs at the three identified effect levels, the perceived effectiveness by respondents was the object of study instead of the real effectiveness. This is based on the assumption that the importance given to effectiveness later is every bit as important as actual HRD effectiveness (Ford & Noe, 1987). Statements on the achieved effects of the selected HRD programs had answers on a five-point scale, running from 1 (totally disagree/not at all) to 5 (totally agree/completely) and a possible 6 score (for unknown, no idea, or not relevant).

Additional questions in the questionnaire for HRD company representatives concerned the company itself and HRD related factors. These included questions on the kind of problem that was a starting point for HRD (divided into three categories: to resolve a problem concerning employee, department or company performance; to improve certain working practices; or to change or renew the company situation), on the structure of the company and HRD function, on important innovations occurring since 1990 within the company as well as in the HRD function, on the design of the selected program, and on conditions made for transferring of the learning results into working practice. The questions had both pre-coded and open answers. Twelve statements focused on company HRD climate and comprised, among others, statements on a respondent's perception of management attitude towards training. These statements also had answers on a five-point scale.

Response. 752 questionnaires were sent to the automation group (23 HRD company representatives, 320 trainees, 277 managers, and 132 subordinates). All 23 HRD company representatives completed the questionnaire, while 54% of trainees, 43% of managers, and 29% of subordinates responded. 740 questionnaires were sent to the social skills' group (21 HRD company representatives, 292 trainees, 251 managers, and 176 subordinates). All HRD representatives completed the questionnaire, while 63% of trainees, 49% of managers, and 49% of subordinates responded. The final group of respondents in this study had a sample size of 44 HRD company representatives, 357 HRD participants, 242 supervising managers and 124 subordinates. Although the response group may not be fully representative for all respondents within those companies, this may not be troublesome, since this study focuses on correlations between variables (Zetterberg, 1963).

Analysis. The two-stage sampling design (first a sample of companies, then a sample of respondents within each company) resulted in a hierarchical, nested data structure. Multilevel statistical models (cf. Goldstein, Rasbach, Plewis, et al, 1998) are suitable for handling data with such a structure. Unlike obvious techniques such as analysis of covariance or regression analysis, these multilevel statistical models allow statistical inferences both at individual respondent (sample size 767) and company (sample size 44) levels. Using these models it is possible to distinguish between within and between company relationships between variables. A one-factor analysis was used to assess the construct validity of two scales. From the scale 'company HRD climate', one item with factor loading below .40 was dropped for further analysis. Reliability of the remaining 11 items of this scale led to an alpha of .72 ($M=4.03$, $SD=.45$). Reliability of the nine items of the scale perceived led to an alpha of .89 ($M=3.52$, $SD=.70$).

The analysis is built on earlier findings on the impact of strategic HRD aligning, which is a key concept of HRD policymaking, on perceived HRD effectiveness (Wognum & Bosker, 1998, Wognum, 1999). It was then proved that strategic HRD aligning within companies has a positive effect on perceived HRD effectiveness of .47, and within companies a comparable effect of .49. Respondents' opinion on the quality of this aligning process even accounts for 22% of the variance in the HRD effectiveness score (see model 2 in Table 2). Model 2 turned out to be the best fitting model to explain this effect on perceived HRD effectiveness (Wognum, 1999).

Results

For exploring the impact of organization and HRD related factors, the variables size and structure of the company, degree of innovation of the company, structure and position of the HRD department, degree of innovation of the HRD department, design of HRD programs, conditions made for the transfer of learning results, and company HRD climate are separately brought into Model 2. The results of these analyses per factor are discussed below and presented in Tables 2, 3 and 4. Only the significant results are presented. The variable economic sector only served as a selection criterium. It was not brought into the analysis since no significant effect on perceived HRD effectiveness was found concerning this characteristic (Wognum, 1999). For the factors size and structure of the

organization, structure of the HRD function, and transfer conditions, no differences in perceived HRD effectiveness were observed. A link was found, however, between the following organization and HRD related factors and perceived HRD effectiveness.

Problem that Served as Starting Point for HRD

It was found that the problem that served as starting point for HRD has no significant effect on perceived HRD effectiveness in itself (Table 2, Model 3a).

Table 2: Effects (and standard errors) of the problem that served as starting point for HRD, and of the interaction of this problem and type of HRD program, on perceived HRD effectiveness (number of respondents = 440; number of companies = 44)

	model 2	model 3a	model 4
intercept	1.83 (.16)	1.80 (.17)	1.91 (.17)
supervising managers	-.05 (.06)	-.05 (.06)	-.04 (.06)
subordinates	.14 (.11)	.14 (.11)	.16 (.11)
HRD company representatives	-.03 (.12)	-.09 (.13)	-.07 (.13)
strategic aligning within companies	.49 (.05)**	.51 (.05)**	.52 (.05)**
strategic aligning between companies	.47 (.19)**	.47 (.20)**	.50 (.17)**
type of HRD program ^{a)}			-.32 (.13)
change/renew comp. situation (contrastgroup)		-	-
resolve actual problems		-.10 (.18)	.20 (.24)
improve working practices		-.11 (.07)	-.08 (.09)
HRD program*resolve actual problems			-.64 (.35)
HRD program*improve working practices			.03 (.14)
unexplained variance			
between companies	.075 (.02)	.076 (.02)	.048 (.02)
within companies	.304 (.02)	.287 (.02)	.285 (.02)
explained variance R ²	22%	25%	31%
deviance	776.413	665.369	650.818

a) automation programs (as contrast group) versus social skills programs

*) significant at $\alpha < .10$ (two-tailed)

**) significant at $\alpha < .10$ (one-tailed)

In interaction with the type of HRD program (automation or social skills) the problem that served as starting point for HRD proved to have a positive effect on perceived HRD effectiveness. If the actual performance of employees, departments or the entire company is starting point for HRD interventions, then the impact on perceived HRD effectiveness was .20 in the case of automation programs (see Model 4 in Table 2). For social skills programs this effect was then .64 lower, which is significant. This interaction effect explains 6% of unique variance in HRD effectiveness.

HRD Climate and Position of the HRD Department

The data in Model 3b (see Table 3) show that the effect of the HRD climate on perceived HRD effectiveness was -.19 (significant), meaning that HRD climate correlates negatively with HRD effectiveness. This factor explains 1% extra variation in perceived HRD effectiveness. No interaction effects were found between HRD climate and type of HRD program, indicating that the effect of HRD climate on perceived effectiveness is negative, regardless whether it concerns automation or social skills programs.

The same applies to the position of the HRD department when this is not placed in the management line, but is part of a staff department, for instance, the company's personnel department (see Model 3c in Table 3). The data indicate that the effect on perceived HRD effectiveness is .40 lower where the HRD department is part of a staff department, than when it has 'other position than a staff department', which is significant. Through this factor the variation in the perceived HRD effectiveness score was explained for 5% more. No interaction effect between 'position of the HRD department' and 'type of HRD program' were found, implying that the perceived HRD effectiveness score in companies with an HRD department as part of a staff department is significantly lower than in

companies with an HRD department positioned as other than a staff department, no matter if it concerns automation or social skills programs.

Table 3: Effects (and standard errors) of the HRD climate and position of the HRD department on perceived HRD effectiveness (with 'other position than a staff department' as contrast group) (number of respondents = 440; number of companies = 44)

	model 2	model 3b	model 3c
intercept	1.83 (.16)	2.61 (.49)	1.92 (.16)
supervising managers	-.05 (.06)	-.05 (.06)	-.05 (.06)
subordinates	.14 (.11)	.13 (.11)	.13 (.11)
HRD company representatives	-.03 (.12)	-.02 (.12)	-.04 (.12)
strategic aligning within companies	.49 (.05)**	.48 (.05)**	.49 (.05)**
strategic aligning between companies	.47 (.19)**	.52 (.19)**	.42 (.16)**
HRD climate		-.19 (.11)*	
position as part of a staff department			-.40 (.11)**
unexplained variance			
between companies	.075 (.02)	.066 (.02)	.045 (.02)
within companies	.304 (.02)	.304 (.02)	.305 (.02)
explained variance R ²	22%	23%	28%
deviance	776.413	773.727	763.607

*) significant at $\alpha < .10$ (two-tailed)

**) significant at $\alpha < .10$ (one-tailed)

The Form the HRD Program Takes

More than 56% of the 44 HRD programs studied were tailor-made, 25% were standard, while about 18% had another form, usually an adaptation of a standard program to a specific company situation. The data in Table 4 indicate that the form of the HRD program correlates negatively with perceived HRD effectiveness. When compared to standard and other kind of off-the-shelf programs, tailor-made or customized programs result in a lower level of effectiveness (regression coefficient = -.44, standard error = .10). This factor explains 7% more of the variation in the perceived HRD effectiveness score. No significant effects were found when interacting the variable 'form of HRD program' with the variable 'type of HRD program'. This means that the perceived effectiveness of tailor-made programs are less than other program forms, irrespective of whether they are geared to automation or social skills.

Table 4: Effects (and standard errors) of the form of HRD programs on perceived HRD effectiveness (standard program as contrast group) (number of respondents = 440; number of companies = 44)

	model 2	model 3d
intercept	1.83 (.16)	2.11 (.18)
supervising managers	-.05 (.06)	-.04 (.06)
subordinates	.14 (.11)	.16 (.11)
HRD company representatives	-.03 (.12)	-.05 (.12)
strategic aligning within companies	.49 (.05)**	.49 (.04)**
strategic aligning between companies	.47 (.19)**	.48 (.16)**
form of HRD program:		
standard (contrast group)		-
tailor-made		-.44 (.10)**
another form		-.13 (.13)
unexplained variance		
between companies	.075 (.02)	.04 (.02)
within companies	.304 (.02)	.303 (.02)
explained variance R ²	22%	29%
deviance	776.413	759.108

**) significant at $\alpha < .10$ (one-tailed)

Conclusion and Discussion

The survey investigated to what degree respondents' perceptions on HRD effectiveness varied as a result of certain organization and HRD related characteristics as summarized in Table 1. No differences in perceived HRD effectiveness was observed for the factors size and structure of the organization, structure of the HRD function, and transfer conditions. Apart from a recent closed study into the effect of training in the workplace (Van der Klink, 1999), it is not known whether other research supports one or more of these findings. Van der Klink's study found that the transfer of training is largely explained by characteristics of participants, i.e. level of self-confidence and behavior after training. Workplace characteristics (support by the manager or pressure of work) had virtually no influence on the transfer of training. The study presented here has included such characteristics among the transfer conditions.

A link was found between other organization and HRD related factors and perceived HRD effectiveness. For instance, the effects of automation and social skills programs will vary whether shortcomings in actual performance of employees, departments or the entire company need to be resolved. A possible explanation may be that with social skills programs other kinds of knowledge, skills and attitudes are important than with automation programs. With the latter, the competences are, in most cases, very specific. It mainly concerns the learning of facts and procedures which are easy to apply to the tasks and functions of HRD participants. Competences that have to be learned in social skills programs are more general. They often concern communication, cooperation or managerial skills and attitudes, which are less easy to apply (Romiszowski, 1984).

The HRD climate correlates negatively with HRD effectiveness regardless of the type of HRD program. This is amazing, because it seems more logical that a positive HRD climate will enhance the transfer of the learning competences to the workplace. A possible explanation may be that the climate scale was based on perceptions of one respondent group (HRD company representatives). Their perceptions may be different from those of other groups of stakeholders. Managers may also vary concerning their attitude towards HRD. Some of them may fulfill an active and stimulating role, while others are likely to impede the learning and development of their employees (Tjepkema, ter Horst, & Mulder, 1999).

One of the findings of the survey was that HRD departments are less effective when they are part of a staff department, for instance, the company's personnel department. This is likely to do with the disadvantages that are ascribed to a line-staff organization everywhere. A staff position, away from the core processes of a company, will impede the department to pay full attention to problems and developments in working practices. This position favors a more theoretical and top-management approach.

The form the HRD program takes correlates negatively with perceived effectiveness. When compared to standard and other forms of HRD programs, tailor-made programs result in lower effectiveness. This partly explains why social skills programs prove to be less effective than automation programs (Wognum, 1999), since the former are often custom-made. However, no studies were found to support this finding. As far as is known, only the earlier-mentioned Van der Klink study points in this direction. Van der Klink puts the workplace as a powerful setting for training into perspective, largely due to the area of tension that exists between producing profitable work on the one hand and creating sufficient space for learning processes on the other. It is on-the-job training programs, in fact, that are typically tailor-made. These results are somewhat paradoxical in nature, because it may be expected that tailor-made programs are most effective because of their adjustment to the specific corporate problem. A possible explanation may be that customized programs were not the right answers for the company problems identified. Another possible explanation is that the programs were designed from the perspective of one group of employees, in most cases the HRD company representatives. Their viewpoint may be different from such other stakeholders as the HRD participants, their supervising managers, colleagues and subordinates. The so-called tailor-made program then lacks the viewpoint of all persons involved, and is not entirely tailor-made.

Considerations for HRD Practice and Further Research

Based on the findings, a closer link can be arranged between HRD structures and processes and those contextual characteristics which proved to influence HRD effectiveness. However, in future research, some of these factors need to be further considered when studying the effects of contextual factors on HRD effectiveness. One such factor

is the HRD climate within a company. This factor should be measured not only among HRD representatives but also among other stakeholders in order to investigate its influence on HRD effectiveness. Only then it will be clear whether HRD climate positively influences company HRD programs and thus supports the findings of, for instance, Kessels (1993) and Rouiller & Goldstein (1993). Further research into the impact of transfer conditions on HRD effectiveness is also recommended. It also seems unlikely that every contextual factor promotes HRD effectiveness separately (cf. Roth, 1992). Research into the internal consistency between organization and HRD related factors is therefore desirable.

In order to carry out further research a sufficient number of effective HRD training and learning programs need to be selected, which makes demands on HRD structures and processes in companies. For instance, one of the survey findings was that the HRD department is less effective when it is part of the personnel or other staff department. Two strategies may be used to achieve more effective HRD and other learning programs. The first is that HRD departments are placed more in management line. This however increases the distance from the company strategy. The second tactic is to improve the way in which the central department operates, drawing up a strategic mix aimed at centralized and decentralized control. Finally, in order to be effective, tailor-made programs have to be designed not only from the viewpoint of individual HRD company representatives, but from the perspectives of all relevant stakeholders.

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Profile of Management Training Evaluation Studies with Control Group: 1983-1997

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This study quantitatively reviewed major program and design characteristics of 29 empirical management training evaluation studies. The study population was identified through a literature search guided by stated inclusion criteria. The results showed that progress has been made by training researchers in evaluating training outcomes of trainees' job performance and organization results, and in conducting rigorous cause-effect research in the work setting.

Keywords: Management Training, Training Evaluation, Review

Considering the significant amount of resources invested, it was not only reasonable but also ethical to develop effective training evaluation which provided evidence of the effectiveness of training intervention on job performance and organization results (Curry, 1992; Hilbert, Preskill & Russ-Eft, 1997). However, training evaluation studies never seemed to meet these expectations, but have often received severe criticism from professional reviewers (Campbell, 1971; Goldstein, 1980; Latham, 1988; Tannenbaum & Yukl, 1992; Wexley, 1984). Recently, Hilbert, et al. (1997) reviewed scholarly literature of training evaluation research of the last four decades, and concluded that "research on human resource development (HRD) evaluation has focused on a limited number of questions using only a few tools and methods", and "has failed to show HRD's contribution or value to organizations" (p. 109).

Two review articles (Campbell, et al., 1970; Clement, 1981) focused on published empirical evaluation studies on management training. The authors only selected empirical studies with some kind of experimental control--control group or both pre- and post-training measures. They tried to identify the study population and provided an overall picture of the evaluation studies on management training at that time. Campbell et al. (1970) included 73 studies published before 1970, and Clement (1981) had 26 that were published during the 1970s. However, the information from the studies reviewed was basically inadequate and led to no conclusion on which specific program or technique led to greater or lesser changes for a certain attitude or behavior measured by a certain criterion.

The major critical shortcomings of evaluation studies pointed out by Campbell, et al. (1970) included: (a) placed almost exclusive reliance of management development research on internal criteria, i.e., participants' reaction and learning, (b) examined a relatively small range of content and techniques of training, and used few well-researched measures, (c) lacked comparative studies and research studies incorporating measures of individual differences, and organization climate factors, (d) depended exclusively on the statistical significance as an indicator of judging success or failure of training. Clement (1981) used a similar format to Campbell, et al. for the purpose of comparison. He pessimistically stated that management training evaluation practices had not improved during the 1970s.

The relationship between managerial training and the acquisition of managerial skills was clearer after Burke and Day (1986) went beyond previous literature reviews by "quantitatively evaluating the degree to which the effectiveness of managerial training generalizes across settings for various training content areas, training methods, and outcome measures" (p. 243). They applied meta-analytical techniques to 70 empirical studies having at least one control or comparison group and published over a 32-year period (1951-1982). Although they found out that different methods of managerial training were, on the average, moderately effective in improving learning and job performance, "a great deal of empirical research on managerial training is needed before more conclusive statements can be made" (p. 232).

To provide historical data after 1982, this study depicted a profile of empirical management training evaluation studies published during a 15-year period of 1983 to 1997. The study addressed the following research questions:

1. What is the general information of the empirical management training evaluation studies in terms of publication information, type of organization and trainee position?
2. What is the distribution of training content areas and teaching methods that are under evaluation?
3. What is the status of training program design and duration?
4. What is the distribution of criteria used for measuring training outcomes?
5. What are the research design characteristics of the studies reviewed?

Literature Review

To provide evidence of the effectiveness of management training, it is important to improve the quality of evaluation research studies. Major issues concerned by management training evaluation reviewers included measurement criteria of training outcomes, research design and experimental control, the scope of content and methods evaluated, program design and implementation, trainee and organization characteristics, and report of research results.

Measurement Criteria of Training Outcomes

Training outcomes had a manifold nature, so it was important to establish multiple criteria that reflected the various instructional objectives and organizational goals. Four criteria of evaluating training outcomes were most commonly accepted and widely used by training researchers and practitioners: reactions, learning, behavior and results (Goldstein, 1980; Hilbert, et al., 1997; Tannenbaum & Yukl, 1992). The measure of reaction was to find out what the participants thought and felt about the training. The measure of learning was to find out how much the participants increased their knowledge, improved their skills or changed their attitudes as a result of the training. The measure of behavior was to find out whether and in what extent participants used the knowledge and skills they had gained from training in their job roles. The measure of result was to discover the contribution of training to the business results and/or organizational goals (Kirkpatrick, 1959, 1994).

Campbell, et al. (1970) were disappointed with the fact that only 29% of their study population (73 studies) had employed external criteria (i.e., job performance and organizational results) to measure training outcomes. They also were disappointed with the narrow focus of what was measured in a particular criterion. Clement (1981) found that 58% of his study population (26 studies) had measured external outcomes. In Burke and Day's (1986) study population (70 studies), 39 studies (56%) measured trainees' behavior on the job, and 11 (16%) measured organizational results.

The ultimate purpose of training in organizations was to improve job performance and to fulfill organizational goals (Swanson, 1995), and there was no simple relationship between participants' reaction or learning and a change in performance (Campbell, et al., 1970; Dixon, 1990; Faerman & Ban, 1993; Holton, 1996; Tannenbaum & Yukl, 1992). So to demonstrate training effectiveness and to justify training investment, evaluation studies had to try harder to measure training outcomes against external criteria that measured changes in job performance and recognized contributions to organizational objectives.

Research Design and Experimental Control

Research design determined the rigor of the study. Goldstein (1980) reviewed literature related to design issues and methodologies appropriate to training research, especially research conducted in the work environment. The review discussed research design, random selection of subjects, random assignment to experiment, and use of a control group. Tannenbaum and Yukl (1992) discussed alternative research design prompted by difficulties of conducting experimental research in field settings.

Only studies using a control group, or at least both pre-training and post-training measures, could be expected to provide meaningful data regarding effectiveness of intervention. However, there were still many pre-1980 evaluation studies employed no control group and only post-training measures of outcomes (Clement, 1981). Bennett (1995) defined a variable of study design/methodological rigor to indicate the level of rigor or quality associated with each study included in his training effectiveness meta-analysis. He adapted the methodological rigor scale proposed by Terpstra, which included ratings on sampling strategy, sample size, presence of control group, random assignment to conditions, pretest/posttest design, and significance of test.

Training Contents and Methods

The 1970 review (Campbell, et al.) classified management training content into five content categories: General Management programs, General Human Relations programs, Problem-Solving and Decision-Making programs, T-group and Laboratory Education programs, and Specialty programs. The Burke and Day (1986) meta-analysis covered six content areas including General Management programs, Human Relations/Leadership programs, Self-Awareness programs, Problem-Solving/Decision-Making programs, Rater Training, and Motivation/Values Training programs. Blakely, et al. (1994) later expanded the content areas from six to nine by adding Technical Skills, Entrepreneurial Skills, and Ethical Decision-Making.

Campbell, et al. (1970) and Clement (1981) did not give a complete list of teaching techniques that studies covered although they stated that the range was small. Burke and Day (1986) identified seven single or combined teaching methods including lecture, lecture/group discussion, Leader Match, sensitivity training, Behavioral Modeling, lecture/group discussion with role playing or practice, and multiple techniques.

Program Design and Implementation

Positive training outcomes were expected from well-designed and well-administered training programs (Al-Ammar, 1994; Noe & Schmitt, 1986), that provided trainees with relevant and useful knowledge and skills. Training duration referred to the length of training time that the trainees received. It also limited the program design and selection of teaching techniques. Qualitative reviewers normally gave a brief summary of program design based on what was reported in the primary studies. There was a lack of overall picture and measurement of program design and implementation.

Bennett (1995) defined a variable of "implementation quality" as the extent to which a systematic needs assessment was conducted and reported in an evaluation study. The reasoning behind this was that a training program with systematic needs assessment would be better designed and implemented. He coded information about the organization, task and person analysis and converted it to an implementation quality "score". However, only seven percent of his study population reported some needs assessment activities.

Situational Variables

To improve job performance and organizational results, trainees had to apply the knowledge and skills learned to their job situation. Literature on transfer of training suggested that a supportive organizational climate influenced the transfer of training from the classroom to the job. The relevant literature also identified factors affecting transfer of training with empirical evidence (Hilbert, et al., 1997). However, the influence of transfer climate on training effectiveness was unknown. Both Campbell, et al. (1970) and Clement (1981) pointed out that few empirical studies--before 1970 (7%) and in the 1970s (4%)-- had attempted to investigate the effect of situational variables. Bennett (1995) reviewed 177 primary studies published in 1960-1993 in his meta-analysis on training effectiveness. No empirical data were available at that time regarding the influence of favorable environment on training effectiveness.

Report of Research Results

The exclusive dependence on statistical significance as the indicator to judge training success or failure led to the either-or approach of training evaluation (Campbell, et al., 1970). The conflicting results among studies left more unanswered questions than definitive statements concerning the effectiveness of managerial training (Burke & Day, 1986). A non-significant result did not necessarily mean "no training effect". The reviewers called for reporting the relative magnitude of the observed changes between experimental and control groups. To better accumulate research findings across primary studies, authors of empirical research should provide information on the degree of range restriction, criterion and predictor reliabilities, sample characteristics, and a thorough description of research methodology.

Training evaluation reviewers were also concerned with other issues which influenced training outcomes. Two of these were trainee characteristics (Al-Ammar, 1994; Campbell, et al., 1970; Tannenbaum & Yukl, 1992) and quality of training provider (Al-Ammar, 1994; Burke & Day, 1986).

Methodology

This study was part of a meta-analysis on management training effectiveness. Compared to a traditional narrative literature review, meta-analysis was a quantitative review of literature (Wolf, 1986). Meta-analysis summarized quantitatively many individual studies and was a secondary analysis of research data (Glass, et al., 1981). Major procedures related to this study included: (a) set up study inclusion criteria; (b) conducted literature search and procured primary studies; (c) coded study characteristics including program and research characteristics; (d) built a profile for management training evaluation studies.

Although all reviewers made subjective decisions on the selection of studies, a quantitative reviewer had to explicitly state his or her inclusion criteria, and to identify the study population accordingly. The primary studies included in this meta-analysis were empirical evaluation studies which: (a) examined effects of training programs for managerial personnel (including supervisor, manager, executive, administrator), (b) reported outcomes at the learning, behavior and/or organization result levels, (c) used experimental or quasi-experimental design, and reported experimental and control group sample size, (d) reported statistical data, such as group mean and standard deviation, or other inference statistics of r , t , F , to allow calculation of effect size, and (e) were published between 1983-1997. This study analyzed data of the whole study population.

The literature search started with the electronic databases of Educational Research Information Center [ERIC], PsycINFO, Dissertation Abstracts, and [ABI]. The key words used for search included: management training, management development, effectiveness, evaluation, experimental, and control group. Another source was references of major qualitative review articles on management training and training evaluation (e.g., Hilbert, et al., 1997; Latham, 1988; Tannenbaum & Yukl, 1992; Russ-Eft, 1997; Wexley, 1984). Three meta-analytical studies on training effectiveness (Bennett, 1995; Chen, 1994; Lai, 1996) provided additional studies.

A confirmatory rather than an exploratory approach (Hedges, et al., 1989) was employed to select characteristics of the primary studies. Based on literature review, the following characteristics were selected and coded from primary studies: publication information, organization setting, trainee position, training content, training method, training outcomes measurement criteria, training design and duration, and research design characteristics (design, sampling, assignment to treatment, sample size, control of pre-existing difference, significance of result, etc.).

Following Burke and Day's (1986) example of combining source of data (subjective vs. objective) with outcome criteria (learning, behavior and result), this study classified five measurement criteria for training outcomes: subjective learning (SL), objective learning (OL), subjective behavior (SB), subjective result (SR), and objective result (OR). The SL, OL, SB, and OR criteria were congruent with that defined by Burke and Day (1986, p. 233, 237). The subjective result (SR) criterion defined in this study was those measures of organization results perceived by respondents, not reported by hard record, e.g., subordinates' job satisfaction or commitment to the organization, and group effectiveness perceived by subordinates.

Management training programs often employed more than one training technique. Based on the information about training methods reported in the primary studies--lecture, discussion, case study, behavior-modeling, and computer-supported training--the present study classified the teaching techniques into three categories: "cognitive methods mainly", "behavioral methods mainly", and "combination of cognitive and behavioral methods". The study also coded the training skill/task into four categories: cognitive, interpersonal, psychomotor and multiple skills.

The present study also categorized training program design feature from the aspect of duration. The programs were classified as four types: short (less than one day), intensive (one to several days), intensive programs plus distributed sessions, regular programs lasting several weeks or months.

Another concept related to quantitative review was independent data point. To obtain the maximum amount of independent data available from primary studies while eliminating non-independent data, the unit of analysis was defined as one pair of independent experimental and control group under the measurement of one criterion. One unit of analysis generated one independent data point for the meta-analysis.

Results and Findings

The literature search guided by the inclusion criteria identified 47 studies. Thirty-one studies with adequate information were actually coded. After pre-heterogeneity test for outlier, 29 studies with 61 independent data points remained in the study population and corresponding data set.

Research Question 1: What is the general information of the empirical management training evaluation studies in terms of publication information, type of organization and trainee position?

In the study population, 18 studies (62%) were journal articles and 9 (31%) were doctoral dissertations. The others were a conference paper and a book. More primary studies (59%) on training evaluation were published in the 1980s than in the 1990s. The literature search found several meta-analysis on the effectiveness of management training published in the 90's: Chen's (1994) on cross-cultural program, Lai's (1996) on leadership training, and a meta-analysis within a Fortune 500 pharmaceutical company to accumulate evaluation results of 18 managerial and sales/technical training programs (Morrow, et al., 1997). This reflected a new research trend.

Among the 29 studies, 14 (48%) were conducted in business and industry for supervisors (6 of 14), managers (6 of 14), and executives (2 of 14). They generated data points for a total of 33 (54% of the data set), and 10, 21, and 2 for respective trainee position. The second biggest organization setting was education, which constituted 35% of the study population and 23% of the data set. Nine studies evaluated training effect of administrators (school principals, university department heads, and vice presidents), and one study evaluated training effect of managers in education organization. The other studies involved military, government, and hospital, and they accounted for 17% of the study population and 23% of the data set (Table 1 was omitted due to space limitation).

Research Question 2: What is the distribution of training content areas and teaching methods?

There were a total of six management training content areas covered by this study population. Human relations/leadership training was the biggest focus of training evaluation studies. Thirteen studies evaluated training programs with the objective of enhancing interpersonal skills and/or leadership behavior of the managerial personnel. It accounted for 45% of the study population. A total of 31 data points (51% of the data set) were generated from this category. The second large content area was the general management training (6 studies with 7 data points) followed by technical training (5 studies with 10 data points). They accounted for 38% of the study population and 28% of the data set. The remaining 17% included two studies of self-awareness program, two studies of problem-solving/decision-making program and one study of rater training program. They contributed 13 data points (21%) to the data set.

Regarding the training method, all studies used more than one training technique. By classifying them into three categories, the biggest group was the "combination of cognitive and behavioral methods". Twenty-six data points (43%) were generated from it. More than one-third (22 of 61) data points came from the "cognitive methods mainly" category, and the remaining 13 data points were in the "behavioral methods mainly" category. In order to compare training effects of different methods, two studies used all three types of methods, and a few others employed an alternative teaching method (see Table 3).

The training method used in a program was highly correlated with the nature of the skill/task that was taught. There was no psychomotor skill/task taught. Ten programs taught cognitive tasks and generated 21 data points (34% of the data set). Eight programs focused on interpersonal skills and resulted in 8 data points (13%). The majority of the studies (16 studies with 32 data points) evaluated programs that aimed at training managerial personnel with multiple skills. To train cognitive skills, 76% (16 of 21) of the programs were taught by cognitive methods, 14% (3 of 21) by behavioral methods, and 10% (2 of 21) by combined methods. To train interpersonal skills, 50% (4 of 8) of the programs were taught by behavioral methods, 25% (2 of 8) by cognitive methods, and the remaining 25% by combined methods. When the skills/tasks were multiple, the dominant method was the combination of cognitive and behavioral methods (69%). Other programs used either cognitive methods or behavioral methods (12% and 19% respectively).

Table 2 Distribution of Training Content Areas

Training Content	# of Study	% of Study Population	# of Data Point	% of Data set
Human relations/Leadership	13	45	31	51
General management	6	21	7	12
Technical training	5	17	10	16
Self-awareness program	2	7	2	3
Problem-solving/decision making	2	7	3	5
Rater training	1	3	8	13
Total	29	100	61	100

Table 3 Distribution of Training Methods

Training Method	# of Study	% of Study Population	# of Data Point	% of Data Set
Combination of cognitive and behavioral methods	17		26	43
Cognitive methods mainly	11		22	36
Behavioral methods mainly	6		13	21
Total	34 ^a		61	100

Notes. ^a Some studies employed more than one type of method.

Research Question 3: What is the status of program design and duration?

The largest category (41%) was the intensive program (one to several days). It fit the situation of busy working management personnel. Normally the short programs (i.e., only a couple of hours) were not long enough for teaching behavioral or multiple skills. The coded data showed that the 6 studies of short training program (about 20% of the study population) all taught cognitive skills/tasks. Five studies (17%) had a design of "intensive program plus distributed sessions". The distributed sessions were developmental process for trained managerial personnel in their job situations. The coded data showed that these programs all taught multiple skill/task, most had adequate training needs assessment, all had a strong favorable condition of transfer of training, and were well designed and well implemented (Table 4 was omitted)

Research Question 4: What is the distribution of criteria used for measuring training outcomes?

The data presented several facts. First, all studies used more than one level of criteria to evaluate training outcomes with only a few including reaction measurements. Second, 15 studies (52%) with 25 data points (41%) evaluated participants' learning. Only 7 studies (24%) were limited to internal criteria, i.e., not beyond the level of learning. Third, 17 studies (59%) with 24 data points (39%) evaluated trainees' job performance, of which 71% (17 out of 24 data points) employed some kind of job performance appraisal instruments to measure changes in job performance and had multiple measurements. Last, 8 studies (28%) with 12 data points (20%) evaluated organization results (see Table 5).

Table 5 Distribution of Training Outcomes Measurement Criteria

Measurement Criteria	# of Study	% of Study Population	# of Data Point	% of Data Set
Subjective learning (SL)	5		7	11.5
Objective learning (OL)	10		18	29.5
Subjective behavioral (SB)	17		24	39
Subjective results (SR)	3		5	8
Objective results (OR)	5		7	12
Total	40 ^a		61	100

Note. ^a One study used more than one criterion to measure outcomes.

Research Question 5: What are the research design characteristics of the studies reviewed?

Table 6 summarized coded data of research design characteristics. All 29 studies were conducted in the work setting. To find out the true cause-effect relationship between training intervention and outcomes, at least a quasi-experimental design was employed. Though it was difficult, 16 studies (55%) with 46 data points (75%) conducted true experimental research in the working setting, and seven studies (24%) used random sampling. All 29 studies had some kind of control on pre-existing differences between the experimental and control groups. Although it was difficult in conducting experimental research with managerial personnel, more than three-fourth of the studies had a sample size larger than 30.

Regarding the significance of the statistical test of primary studies, among the 61 independent data points, 26 (43%) were non-significant. Researchers did publish their non-significant results. Thus the worry about publication bias could be alleviated.

Table 6 Research Design Characteristics of Primary Studies

Research Design Characteristics	Classification	# of Study	% of Study Population	# of Data Point	% of Data Set
Research Design	quasi-experimental	13	45	15	25
	experimental	16	55	46	75
Random Sampling	not random sampling	22	76	42	69
	random sampling	7	24	19	31
Random Assignment	not random assignment	14	48	16	26
	random assignment	15	52	45	74
N $\geq$ 30	N $<$ 30	7	24	11	18
	N $\geq$ 30	22	76	50	82
Control of pre-existing difference	pre-test	17	59	33	54
	matched control group	7	24	11	18
	others	5	17	17	28
Significance of result	not significant			26	43
	significant			35	57

Conclusions and Recommendations

Based on the results and findings from data analysis, we can conclude that:

1. Training professionals have made efforts to conduct training evaluation beyond the reaction and learning levels to demonstrate positive training effects on job performance and organization results. Learning outcome is still and would continue to be a focus for evaluation since it is the direct objective of training. The situation of exclusive reliance of management development research on internal criteria has been changed. Depending mainly on performance appraisal instruments, about 59% of the primary studies produced multiple measures (by trainee, their supervisor, subordinates, and/or expert) of comprehensive job performance. Since performance appraisal has become a common practice in many organizations, the measurement of job behavior is easier than before for training researchers. However, the measure of organization results was still in a pre-matured stage. The indicators used in this category and the methods used to determine their magnitudes were highly diversified. About half of the studies that measured organization results were dropped by the present study due to inadequate data to calculate effect size.
2. Training evaluation researchers have made progress in research design as well during the past two decades. Quite a number of evaluation studies were conducted in the work setting with real managerial personnel rather than in college classrooms with students. Researchers exerted control on variables to design and conduct experimental or quasi-experimental research in order to find out true cause-effect relationships between training intervention and various outcomes.
3. In regard to the critique of Campbell, et al. (1970) about depending 'exclusively on the statistical significance as an indicator of judging success or failure of training', there was little response from the researchers of primary studies. Only two primary studies in the study population of this study calculated effect size as an addition to normal statistical test results.

Even though progress has been made, many areas and aspects of management training evaluation still need more work. We recommend that:

1. More quantitative reviews should be conducted as complements to qualitative review. Meta-analysis can depict an overall picture of the study population identified by explicitly expressed inclusion criteria. With systematic coding procedure, a quantitative review normally observed more information from primary studies than a qualitative review. The more precise profile can give better insight. More important, only meta-analysis can accumulate quantitative data of training effectiveness across studies.
2. More high quality empirical studies should be conducted and report adequate information for secondary analysis. Many journal articles do not publish enough raw data, especially when the result is non-significant. In fact, it is much easier to calculate the effect size by author(s) of the primary study than by the meta-analyst. If for any reason the primary study does not give the effect size, the editor of the journal should at least publish the group means and their standard deviation.

3. The measurement of organization result outcome needs much work and research. The indicators and methods to determine the numerical value were highly diversified and some were not sensible, especially those that tried to show training contributions to the bottom-line. Before a meta-analysis can draw any reliable conclusions, some basic work needs to be done at the primary study level, e.g., to identify and prioritize the organization indicators which are most relevant to training, and to develop scientific methods to determine the magnitude of these indicators.
4. The "intensive program plus distributed sessions" design deserves more attention from training program designers. The trainees' practice of applying knowledge/skills and developmental process in the job position are designed and implemented as an integrated and formal part of the training program. Under professional trainer's supervision and mentoring, the previously informal on-the-job experience, conditional transfer of training and provisional mentoring are more likely to occur.

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Note: List of primary studies and omitted tables are available on request. Mailto: jzhang1@worldbank.org

An Evaluation of a Competency Based Training Program

Dale E. Thompson

The purpose of this study was to evaluate the Performance Based Teacher Education (PBTE) in Arkansas. PBTE is an approach to teacher training in which a person is required to demonstrate essential teaching skills in an actual training situation. The sample was 74 technical instructors at 11 postsecondary institutes in Arkansas. The competency categories ranked highest by the instructors were serving learners with special/exceptional needs, instructional planning, instructional evaluation and teaching adults.

Keywords: Training, Evaluation, Competency Based Teacher Education

Competency based education/training is a method of designing education/training to meet workplace needs. It is a training program that is individualized, focuses on outcomes and allows flexible pathways for accomplishing the outcomes. It makes clear what is to be achieved and the standards by which the achievements are to be measured (Kerka, 1998). Competency based education is an approach to education which makes sure that the competencies taught are those that are required on the job (Watson, 1990). Competency based training requires more planning and organization than traditional education. It requires an extensive process of identifying relevant skills needed in a particular job/position; organizing those skills so that learning activities can be developed; requiring more hands-on materials for training; delivering instruction with methods different from traditional teaching which requires trainers to be retrained for the program; and keeping more records which requires more time (Foyster, 1990). The goal of competency-based education/training is the transfer of learning to the actual work environment.

Many industries are providing worksite training to their employees. According to Lankard (1991) in the mid to late 1980s, employer sponsored training expenditures were approximately \$40 billion. Currently employers spend \$210 billion a year for training, while the government spends another \$5 billion. (Billington, 1998). According to an Industry report in *Training* (Bill Communications, Inc., 1999) magazine, the overall training budget for industry (those with 100 or more employees) has risen by 24% since 1993. Sixty nine percent of their training budget goes to the training staff salaries. Even though training departments use a variety of training methods, 90 % use live-classroom programs and of all training done, 73% is classroom instruction with on site instructors.

With the amount of time and money invested by industry, it is clear that they take training seriously. However, all too often trainers are subject matter experts who are very knowledgeable of the content but have little or no experience about teaching (Charles & Clarke-Epstein, 1998). They are expected to deliver training as well as present information even though they have seldom received any formal instruction on how to teach/train (Lawson, 1998). This may be a major reason why many training programs do not help learners reach training objectives or apply what is learned to the real world (Ford, 1999). Ford (1999) also says that as much as half of current training is not transferred back to the job.

Purpose of the Study

The purpose of this study was to evaluate the Performance Based Teacher Education (PBTE) program used in Arkansas. It is a competency based educational program for individuals who plan to be instructors as well as those who are already instructors. The PBTE program was developed by the Center for Vocational Education located at the Ohio State University. It was funded and sponsored by the U.S. Office of Education and the National Institute of Education. PBTE is an approach to teacher training in which a person is required to demonstrate essential teaching skills in an actual training situation.

This research-based program uses 132 separate learning packages, called modules, which focus on 400 professional competencies found to be important to occupational specialties instructors. They are designed for trainers/instructors in the areas of health/medical, business/computers and trades as well as instructors teaching academic and literacy skills. Each learning packet was extensively field tested in staff development and teacher education programs at 18 institutions of higher education. The evaluations and field tests resulted in self-directed

learning experiences that integrate theory and application. After completing the self-directed experiences, the instructors demonstrated the application of the theoretical information in an actual classroom setting. These modules were designed for use by individuals or groups. (Fardig, Norton, Hamilton, 1977) (Hamilton, Quinn, 1981)

In 1982 the Arkansas Department of Education, Vocational Technical Education Division, started a professional development program for all instructors hired into the states postsecondary vocational technical school system. The purpose of the program was to help them grow in three professional development areas, teaching skills, technical competencies and related professional activities. The PBTE program developed by the National Center for Research in Vocational Education addressed teaching skills (Andrew, 1987). All instructors in the state system were occupational specialist hired directly from industry to teach technical courses in areas of health/medical, business/computers, trades, academic, and literacy skills. Their students were training to enter industry jobs.

A university vocational teacher educator coordinated the Arkansas PBTE program. The primary responsibility of this teacher educator was to observe instructors demonstration of the knowledge, skills and attitudes required to perform a given teaching competency. The teaching competencies areas identified within the PBTE program were as follows:

- Category A: program planning, development and evaluation
- Category B: instructional planning
- Category C: instructional execution
- Category D: instructional evaluation
- Category E: instructional management
- Category F: guidance
- Category G: school-community relations
- Category H: student vocational organizations
- Category I: professional role and development
- Category J: coordination of cooperative education
- Category K: implementing competency based education
- Category L: serving learners with special/exceptional needs
- Category M: assisting students in improving their basic skills
- Category N: teaching adults

Method

Sample

All instructors in the state system were occupational specialist hired directly from industry to teach technical courses in areas of trades, literacy, business/computers, health/medical, as well as instructors teaching academic skills. All students in the program were training for industry jobs.

Instrumentation

The survey instrument included a complete list of all 132 PBTE modules/competencies. Using the official records of the University resource person, an individualized survey form was developed for each participant. The competencies completed by each instructor were highlighted in yellow on the survey form. Participation in the survey was voluntary and responses were kept confidential. Each instructor was asked to respond only to those competencies they had completed. They responded on a five point Likert type scale ranging from 'very helpful', 'helpful', 'somewhat helpful', 'slightly helpful' to 'not helpful'. Data were analyzed by giving the 'very helpful' category a rating of 5 and decreasing to the value of 1 for the rating of 'not helpful'. In addition, a short demographic section was included which asked for area of instruction, number of years as an instructor, years in the occupation and level of formal education. The instrument was not tested for reliability or validity since it was just a complete listing of all teaching/training competencies, which made up the overall PBTE program.

Data Analysis

Data were analyzed for frequency and means using SPSS statistical computer package (Statistical Package for the Social Sciences, 1995). An analysis of variance was used to determine differences between instructor/trainers perceptions and their years of teaching experience, years of work experience in their occupational area, level of education and their teaching area.

Results

The survey was distributed to all technical instructors at all 11 postsecondary technical institutes in Arkansas who were actively involved in the PBTE program. Instructors who had not participated in the program within the past 2 years were not surveyed. One hundred thirty seven (137) surveys were distributed. Seventy-four were returned.

Twenty-nine of the respondents were trade instructors, 19 were literacy instructors, 6 were business/computer instructors, 5 were health/medical technology instructors and 11 were academic instructors. Four respondents did not indicate their teaching area. Their years of experience as an instructor ranged from 1 to 23 years, with the average being 6.4 years. The years of occupational experience ranged from 0 to 50 with the average at 11.5 years. None of the respondents has less than a high school diploma. Nineteen had a high school diploma, 11 had an associate degree, 24 had a bachelor's degree, and 16 had a master's degree. One indicated other, and 3 did not indicate a level of formal education.

The mean responses for the total group of participants were the highest, at 4.1, for the instructional planning competencies (B category). This was followed by three categories of competencies with a mean of 4.0. These were: instructional evaluation (D category); serving learners with special/exceptional needs (L category); and teaching adults (N category). (See Table one). The mean score for the total group was 3.8 for all 14-competency categories.

The trade instructors (those teaching mechanics, welding, electronics) rated the instructional planning competencies (B category) the highest with a mean of 4.4. The second highest rating for trade instructors was for the instructional evaluation competencies (D category) with a mean of 4.2. This was followed by the instructional execution competencies (C category) and the serving learners with special/exceptional needs (L category) both with a mean of 4.1 (See Table one). The mean responses by the trade instructors for all 14-competency categories were 3.8.

The literacy instructors (those teaching adult basic education) rated the teaching adults (N category) the highest with a mean of 4.0. The next highest rated by literacy instructors were the coordination of cooperative education competencies (J category) with a mean of 3.8. This was followed by the serving learners with special/exceptional needs competencies (L category) and the assisting students with improving their basic skill competencies (M category) both with a mean of 3.7 (see table one). The mean response by the literacy instructors for the total 14 competency categories was 2.8.

The business/computer instructors (those teaching computer information systems and accounting) rated the serving learners with special/exceptional needs competencies (L category) the highest with a mean of 4.3. This was followed by the implementing competency-based education competencies (K category) with a mean of 4.2. Next were the instructional evaluation competencies (D category), assisting students in improving their basic skills (M category) and the teaching adults competencies (N category) all with a mean of 3.7. (See table one). The business/computer instructors rated all 14 competencies categories at 3.6.

The health/medical instructors (those teaching nursing and emergency medical technology) rated the instructional evaluation competencies (D category) the highest with a mean of 4.9. Next highest for health/medical instructors were the instructional planning competencies (B category) with a mean of 4.7. This was followed by the coordination of cooperative education competencies (J category) with a mean of 4.6. Next were the instructional execution competencies (C category) with a mean of 4.5. (See table one). The mean response for the health/medical instructor for all 14-competency categories was 4.5.

The academic instructors (those teaching math and communications) rated two competency categories the highest with a mean of 4.4. Those were school-community relations (G category) and serving learners with special/exceptional needs (L category). The second highest were the teaching adults competencies (N category) with a mean of 4.3. This was followed by the instructional planning competencies (B category) and the guidance competencies (G category) both with a mean of 4.2. (See table one). The academic instructors had a mean score of 4.0 for all 14 areas of competency categories.

The results of the analysis of variance performed on the numbers of years of teaching experience, years of work experience in their occupational area, level of education did not reveal significance difference between groups. However the analysis of variance did reveal a significance difference in teaching area. The health/medical instructors had a significantly higher perception of the usefulness of competencies in seven of the categories. (A, B, C, D, E, J, K). The academic instructors had a significantly higher perception of the competencies in three of the categories (G-I-L) than all other participants. The remaining categories (F, H, M, N) revealed no significant differences by teaching areas.

Discussion

There were 4 competency categories, which were consistently ranked/rated the highest, in the helpful level. The category selected the highest was the L category which was- serving learners with special/exceptional needs. Specific competencies in this category consisted of identifying and diagnosing exceptional learners, planning instruction, providing appropriate instructional materials for exceptional learners, modifying learning environment for exceptional learners, using instructional techniques to meet needs of exceptional learners and assessing the progress of exceptional learners. It is quite possible that participants viewed themselves as being prepared to teach traditional students however they felt inadequate to teach special/exceptional students. Therefore they viewed these competencies as being helpful.

A second category consistently ranked high was the B category - instructional planning. Competencies in this area included determining needs and interest of student, developing performance objectives, developing a unit of instruction, developing a lesson plan and selecting instructional materials. It is possible that these groups of competencies were viewed as helpful since they are basic instructional skills, which are needed on a daily basis by instructors.

The next category of competencies frequently selected high was the D category - instructional evaluation. Competencies included were establishing student performance criteria, assessing student performance, determining student grades and evaluation instructional effectiveness. These competencies may have been regarded as helpful since instructors were concerned about grading student in a fair and impartial manner. These competencies help with establishing and conducting student evaluation.

The last category ranking consistently high was the N category- teaching adults. This area includes competencies such as determining adult training needs, planning instruction for adults, managing the adult instructional process, and evaluation the performance of adults. These competencies were rated high or helpful since many instructors felt they needed help with the over all instruction of adults due to their experiences with teaching in pedagogical rather than the andragogical areas.

Conclusions

Of the 14 competency categories in the Arkansas PBTE program, the instructors found that the areas that contributed the most to their teaching development were instructional planning, instructional evaluation, serving learners with special/exceptional needs and teaching adults. All of these categories were viewed as being helpful. The results of this study show that instructors found the modules to be a helpful form of training. This indicates that a competency based training program such as PBTE was widely accepted by instructors. PBTE offers a self-paced, individualized way for tradesmen to make the transition to instructors. This training will benefit them on their current job as well as in future endeavors.

Table 1

Mean Score by Instructional area and Competency Category

* Competency Category	**Instructional Area					
	Trade	Literacy	Business	Health	Academic	Total
A	3.8	3.5	3.7	4.1	4.0	3.8
B	4.4	3.1	3.8	4.7	4.2	4.1
C	4.1	2.8	3.0	4.5	3.9	3.7
D	4.2	3.1	3.9	4.9	4.0	4.0
E	3.7	2.8	3.3	3.6	3.5	3.4
F	3.9	3.2	3.7	3.9	4.2	3.7
G	3.9	3.5	3.4	3.9	4.4	3.8
H	3.2	3.1	3.6	3.3	3.8	3.3
I	3.7	3.3	3.0	3.8	3.9	3.6
J	3.0	3.8	2.4	4.6	4.0	3.4
K	3.9	3.2	4.2	4.2	3.4	3.7
L	4.1	3.7	4.3	4.4	4.4	4.0
M	3.8	3.7	3.9	3.6	3.9	3.7
N	4.0	4.0	3.9	4.0	4.3	4.0

*Competency Category Areas

Category A:	program planning, development and evaluation
Category B:	instructional planning
Category C:	instructional execution
Category D:	instructional evaluation
Category E:	instructional management
Category F:	guidance
Category G:	school-community relations
Category H:	student vocational organizations
Category I:	professional role and development
Category J:	coordination of cooperative education
Category K:	implementing competency based education
Category L:	serving learners with special/exceptional needs
Category M:	assisting students in improving their basic skills
Category N:	teaching adults

**Instructional Areas (those teaching the following areas)

Trade:	welding, electronics, mechanics, automotive service, drafting, air conditioning and refrigeration, industrial maintenance, tool and dye technology, industrial processing
Literacy:	adult basic education
Business/computers:	computer information systems, accounting, computer applications, business education, office technology
Health/medical:	nursing, medical assisting, surgical technology
Academic:	math and communications
Total:	all of the above

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